



January 31, 2020

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**PUBLIC UTILITIES
COMMISSION**

The Honorable Chair and Members of
the Hawai'i Public Utilities Commission
465 South King Street
Kekuanaoa Building, 1st Floor
Honolulu, Hawai'i 96813

Dear Commissioners:

Subject: Docket No. 2019-0323
Instituting a Proceeding to Investigate Distributed Energy Resource Policies
Annual Status Report - Interim Time-of-Use ("TOU") Program

In accordance with Order No. 33923 issued September 16, 2016 in Docket No. 2014-0192,¹ as amended by Ordering Paragraph No. 2 of Order No. 36538 issued September 24, 2019 in the subject proceeding, Hawaiian Electric² respectfully submits its Annual Report for the October 1, 2018 through September 30, 2019 period,³ regarding the Interim TOU program.

Sincerely,

Kevin M. Katsura
Director
Regulatory Non-Rate Proceedings

Attachments

c: Service List

¹ Ordering Paragraph No. 2 of Order No. 33923 states: "The HECO Companies shall file an annual status report with the commission no later than January 31 of each year, with the first report due by January 31, 2018."

² "Hawaiian Electric" or the "Company" collectively refers to Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc. and Maui Electric Company, Limited. On December 20, 2019, the State of Hawai'i Department of Commerce and Consumer Affairs ("DCCA") approved Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc. and Maui Electric Company, Limited's application to do business under the trade name "Hawaiian Electric" for the period from December 20, 2019 to December 19, 2024. See Certificate of Registration No. 4235929, filed December 20, 2019 in the Business Registration Division of the DCCA.

³ Due to the limited ability of the Company to retrieve, process, and compile customer load profile data prior to the due date of this report, only load profile data collected at the end of the third quarter of 2019 was used in this report. Consequently, all other data in this report is as of September 30, 2019, so that accurate comparisons can be made across the different sections of this report.

HAWAIIAN ELECTRIC
INTERIM TIME-OF-USE PROGRAM (TOU-RI) ANNUAL REPORT
JANUARY 31, 2020

1. Introduction

In accordance with Order No. 33923, issued September 16, 2016, Hawaiian Electric¹ respectfully submits its Annual Status Report regarding the interim Time-of-Use Program (“TOU-RI Program” or “Program”) for the October 1, 2018 through September 30, 2019 period. The TOU-RI Tariff has been extended indefinitely, as approved in Order No. 35740 issued October 9, 2018 and effective October 18, 2018.

The interim TOU-RI Program is intended to provide residential customers with an incentive to change their behaviors to better align overall energy consumption with availability of production. By structuring three different rates to correspond with demand periods, participating customers are offered a lower rate (compared to the standard rate) when solar photovoltaic (“PV”) production is generally at its peak (assuming favorable weather conditions) and higher rates during the evening and overnight hours.

It should be noted that the interim TOU-RI Program in Hawai‘i is structured substantially different than most residential time-of-use programs on the mainland in that the lowest rate available in Hawai‘i is during daylight hours,² which corresponds with a traditional work/school day schedule – whereas typical mainland time-of-use programs in North America reward shifting behavior from on-peak daylight and early evening hours to off-peak late night and early morning hours when most customers are typically at home. Therefore, the interim TOU-RI Program is best suited for customers who are able to shift their usage from Off-Peak and On-Peak³ to Mid-Day rates through enabling technology, behavioral changes and/or because at least one member in the household is available during all or part of the daylight period.

The interim TOU-RI rate varies per island and allows customers the opportunity to lower their overall bill by shifting as much variable energy use as possible to the lower rate period. Participants who use most of their energy during the Mid-Day hours typically decrease their bills compared to standard rates and customers who continue to use the majority of their energy during the On-Peak and Off-Peak hours experience higher bills compared to the standard rates.

¹ “Hawaiian Electric” or the “Company” collectively refers to Hawaiian Electric Company, Inc., Hawai‘i Electric Light Company, Inc. and Maui Electric Company, Limited. On December 20, 2019, the State of Hawai‘i Department of Commerce and Consumer Affairs (“DCCA”) approved Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc. and Maui Electric Company, Limited's application to do business under the trade name “Hawaiian Electric” for the period from December 20, 2019 to December 19, 2024. See Certificate of Registration No. 4235929, filed December 20, 2019 in the Business Registration Division of the DCCA.

² Mid-Day rate available from 9 a.m.-5 p.m.

³ Off-Peak rate from 10 p.m.-9 a.m.; On-Peak is 5 p.m.-10 p.m.

Therefore, customers who wish to enroll are encouraged to make the behavioral changes necessary to achieve the Program's intended results.

Interested customers enroll in the Program by submitting an enrollment form or by speaking with a customer service representative over the phone. Participants are asked to volunteer demographic information upon enrolling in the Program to better understand their current energy usage patterns for the purpose of future Program improvements. Providing the demographic and lifestyle information is not a requirement for enrollment and explains the various differences between the number of responses and the total number of enrollments throughout the report.

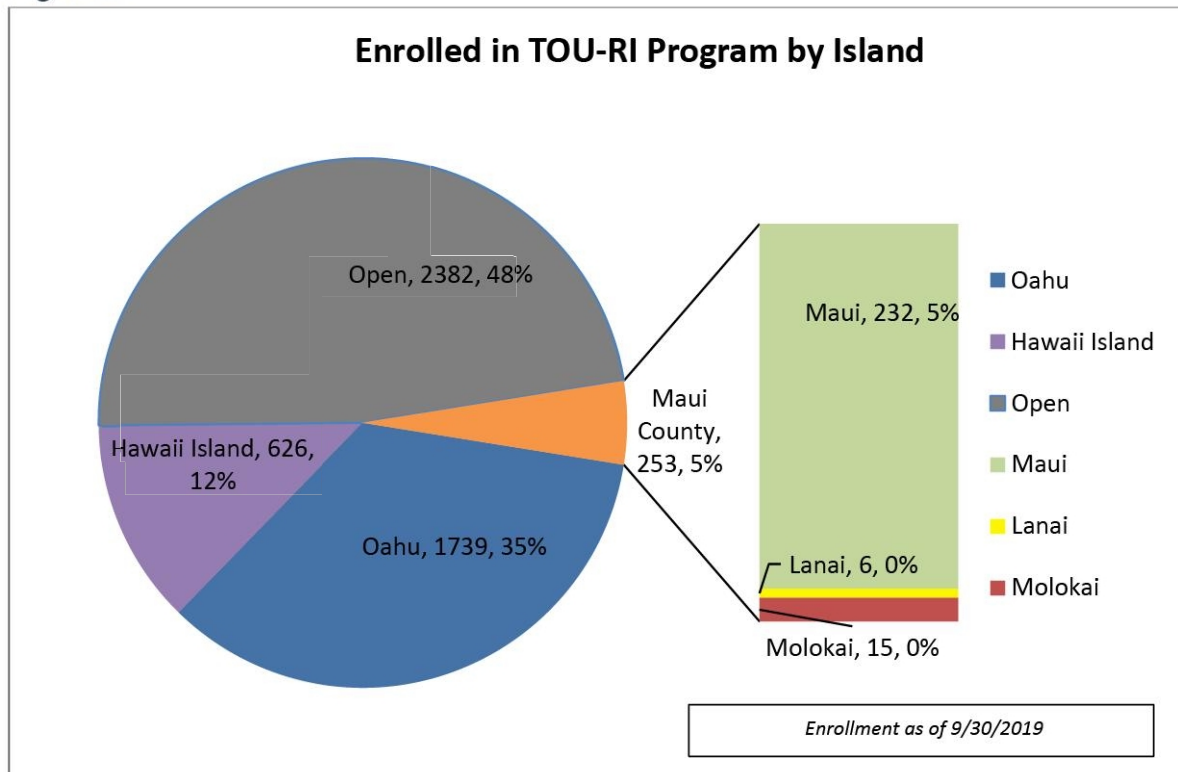
Once enrolled, load profile meters are installed and programmed to monitor corresponding rate periods; however, the standard rate is applied for the first month and customers are asked not to make any behavior changes to establish a baseline to measure subsequent energy use. Following the initial baseline period, customers are moved to the interim TOU-RI rates and provided information about how the Program works. A "shadow bill" is provided for six months to allow the participants to compare their energy costs on the interim TOU-RI rates to the standard rates. Customers may opt-out of the interim TOU-RI Program at any time and if they choose to do so, their meter is once again replaced, this time with the standard meter. The baseline measurement gathered during the first month after the meter installation is used for the load-shift comparison for all subsequent billing cycles.

Due to the limited ability of the Company to retrieve, process, and compile customer load profile data prior to the due date of this report, only load profile data collected through the end of the third quarter of 2019 was used in this report. For this reason, all other data in this report is as of September 30, 2019, so that accurate comparisons can be made across the different sections of this report. The last annual report covered the annual period from October 1, 2017 to September 30, 2018, so this report covers the following year, from October 1, 2018 to September 30, 2019.

2. Customer Adoption

As previously noted, the data used throughout this report for comparison purposes represents the one-year period from October 2018 through the end of September 2019. Unless otherwise specified, the information represents the combined Hawaiian Electric entity. The following enrollment demographic sections are unchanged from the TOU-RI Third Quarter report filed in October 2019.

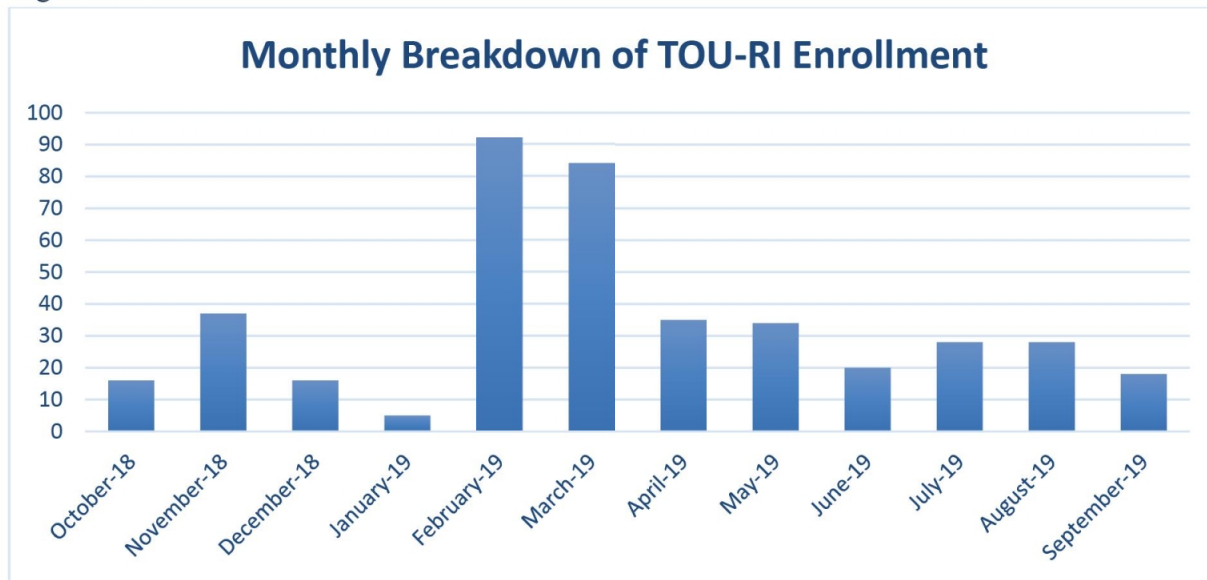
Figure 2.1



As of September 30, 2019 there were a total of 3,493 customers enrolled in the Program while 875 opted out of the Program, resulting in a net of 2,618 customers currently enrolled.

Approximately 52% of the initial 5,000 participant cap had been taken as of September 30, 2019; leaving 2,382 spaces (48%) open to new participants. There were 1,739 customers in the Program for Hawaiian Electric, 253 customers in the Program for Maui Electric, and 626 customers in the Program for Hawai'i Electric Light.

Figure 2.2



Since inception customers were made aware of the interim TOU-RI Program primarily through earned media (newspaper and television news stories), social media and word-of-mouth. The enrollment spikes displayed above in Figure 2.2 in February and March 2019 resulted mostly from a bill insert promoting the program in February 2019.

The Company also tracks how many of the TOU-RI customers are enrolled in other distributed energy resources (“DER”) programs as well as have electric vehicles (“EVs”). Table 2.1 represents those customers currently enrolled as of the end of the third quarter 2019; it is not the cumulative representation of all enrollments (including opt-outs) for the annual time period. There were 96 customers (3%) in the Net Energy Metering (“NEM”) program and 133 customers (4%) who had EVs.

Table 2.1

Company	EV	NEM	CGS	CSS
Hawaiian Electric	91	65	6	3
Maui Electric	11	7	0	0
Hawai‘i Electric Light	31	24	2	3
TOTAL	133	96	8	6

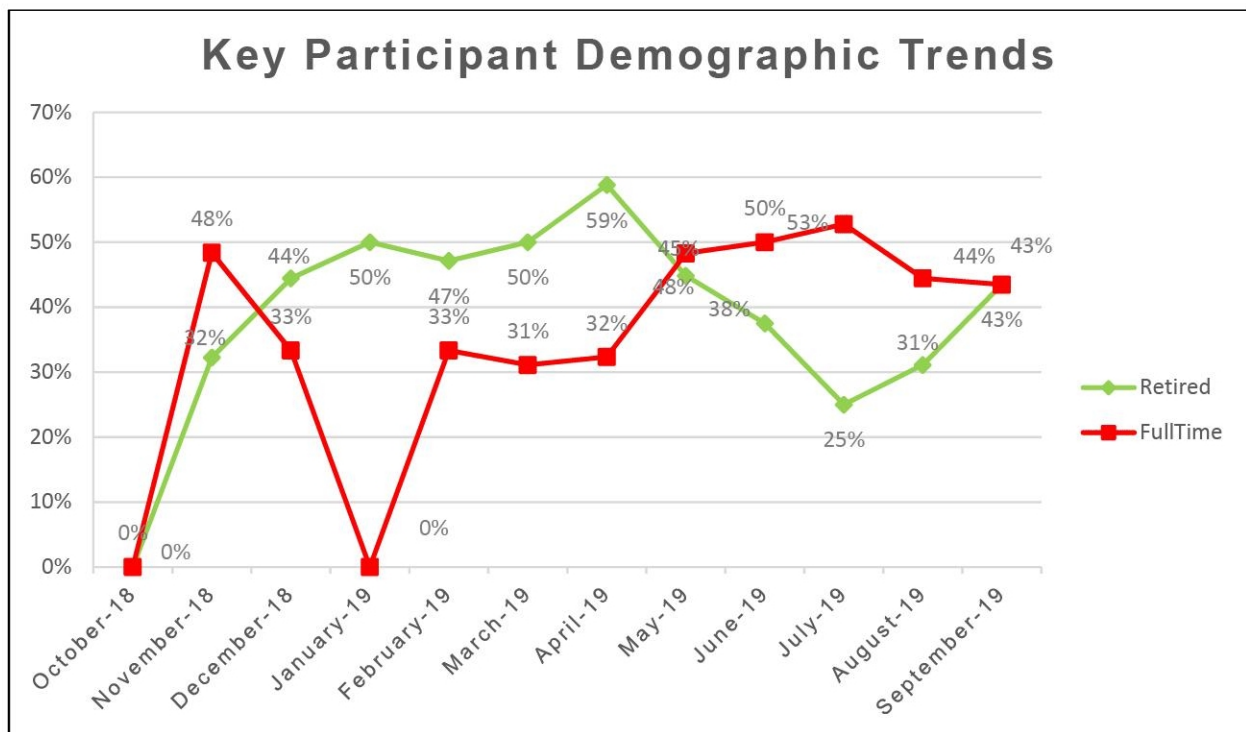
The earned media stories have generally portrayed the TOU-RI Program as beneficial to customers who stayed home during the day, and in particular retirees. The self-reported employment statistics somewhat reflect that perception as shown in Table 2.2.

Table 2.2

Employment Status	Count
# Households with Full-Time Employment Only	354
# Households with Full-Time and Part-Time Employment	80
# Households with Part-Time Employment Only	49
# Households with Retired Only	996
# Households with Not Employed Only	21
# Households with at least 1 retired and 1 working	334
# Work from home	305
Did not answer	1354

Enrollment of various key demographics has remained relatively consistent over time as shown in Figure 2.3. This is based on enrollments received and information provided by customers each month.

Figure 2.3



Customers who enroll in the interim TOU-RI Program are made aware that their participation is valued and welcome; however, they are given the opportunity to exit the Program easily at any time and for any reason. Figure 2.4 illustrates the cumulative opt outs for the program while Figure 2.5 contains data on opt outs for the 12 month period from October 1, 2018 to September 30, 2019.

Figure 2.4

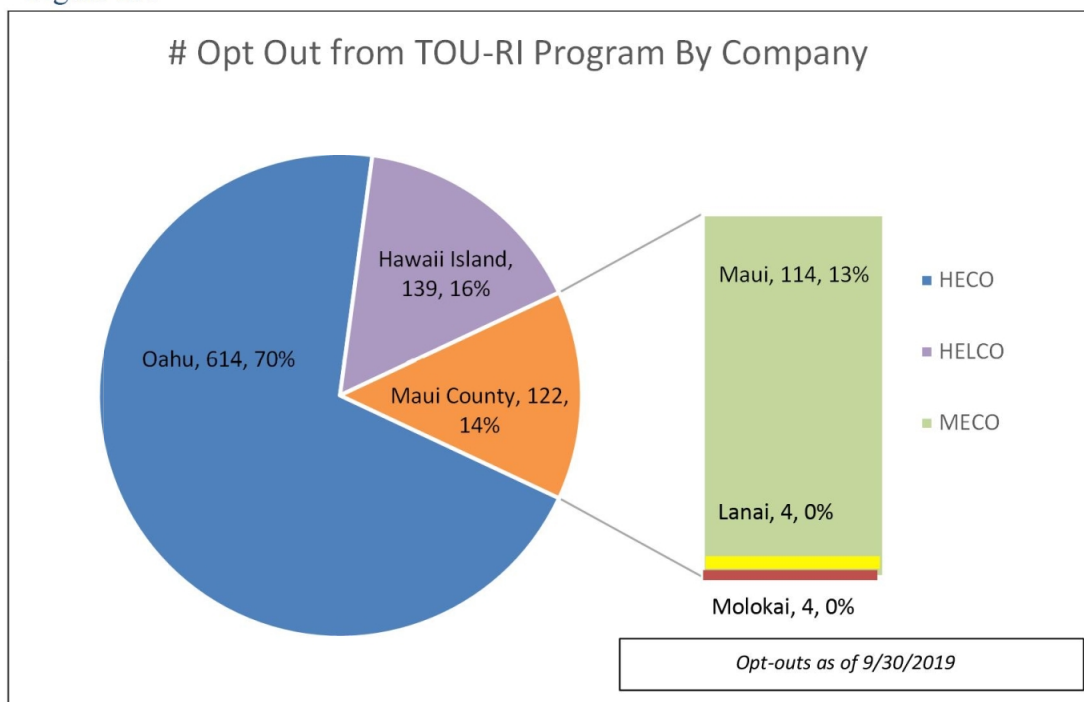


Figure 2.5

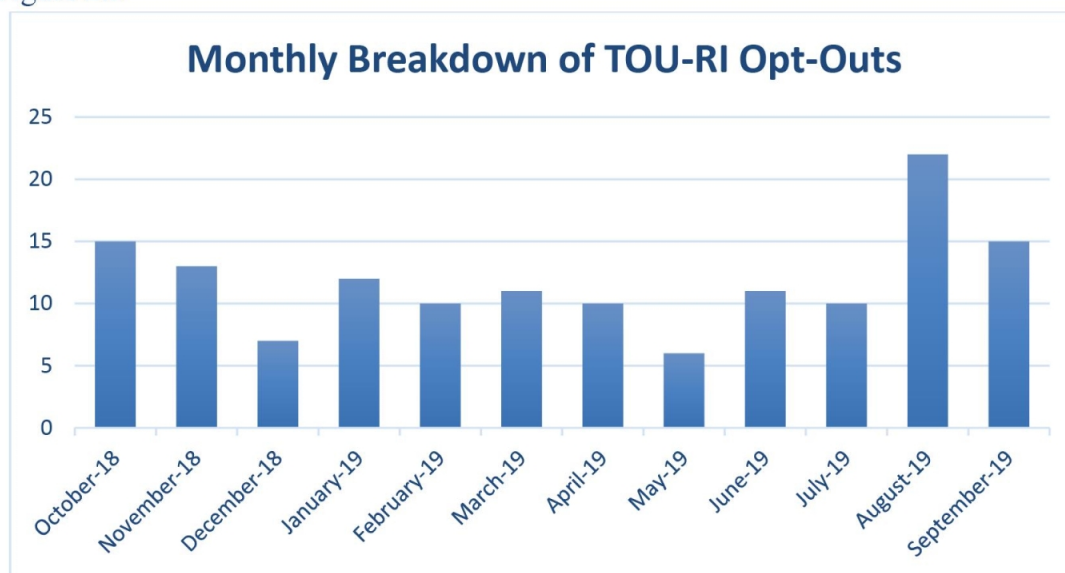


Table 2.3 represents the cumulative number of opt-out customers who were also enrolled in other DER programs or who have EVs as of the end of the third quarter 2019. The higher number of total DER customer opt-outs relative to the currently enrolled figures shown in Table 2.1 above is not surprising given that the TOU-RI rate reduces the benefit of energy export for customers enrolled in NEM.

Table 2.3

Company	EV	NEM	CGS	CSS
Hawaiian Electric	40	129	9	0
Maui Electric	4	29	0	1
Hawai'i Electric Light	4	22	1	0
TOTAL	48	180	10	1

The demographic data on the customers who opted out shown in Table 2.4 out was similar to those enrolled in that the majority of customers were homeowners who were retired.

Table 2.4

Employment Status	Count
# Households with Full-Time Employment Only	107
# Households with Full-Time and Part-Time Employment	29
# Households with Part-Time Employment Only	7
# Households with Retired Only	228
# Households with Not Employed Only	5
# Households with at least 1 retired and 1 working	97
Did not answer	329

3. Customer Satisfaction and Input

Since the implementation of the TOU-RI Program, new participants were surveyed toward the end of each year to gather feedback regarding their experience and determine if and how they used enabling technology. The results presented in this section are a combination of the three phases of surveying that total to 838 responses. The surveys conducted in 2019 were electronic as opposed to paper in prior years. Electronic surveys were initiated as an efficiency measure.

Survey Month	Surveys Distributed	Surveys Received
September 2017	1,000	655
November 2018	225	79
November 2019	361	104

New customers who had opted out of the TOU-RI Program between surveying periods were not included in these customer satisfaction surveys but did fill out exit surveys when they terminated participation. Based on their feedback, the top reasons for opting out were lower than anticipated savings or higher bills as well as others noting the difficulty in adjusting their energy usage behavior.

Figure 3.1

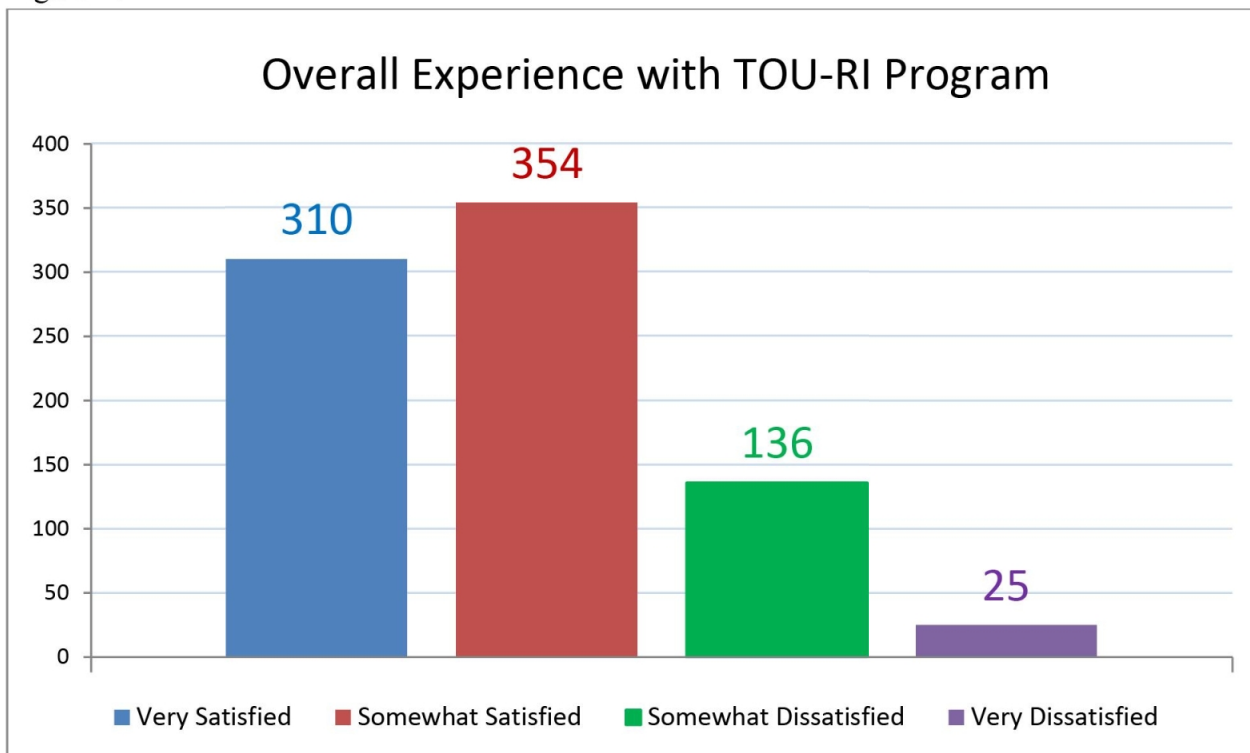


Figure 3.2

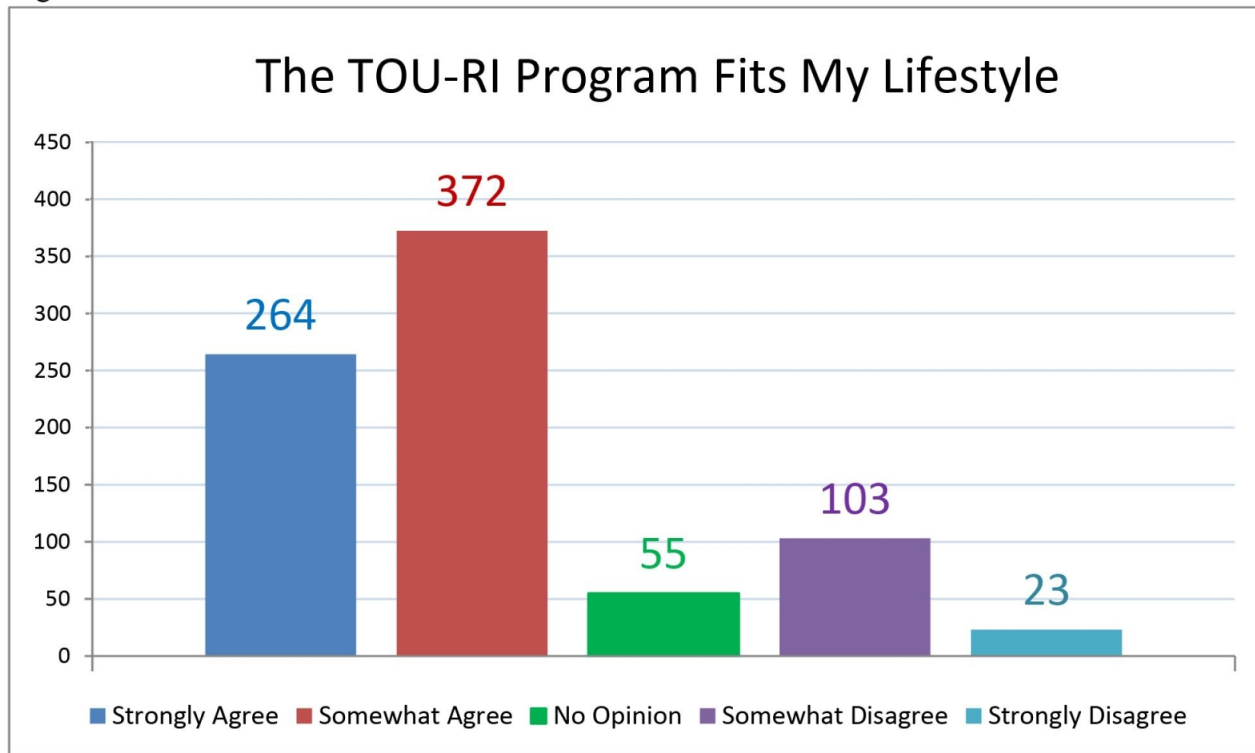


Figure 3.3

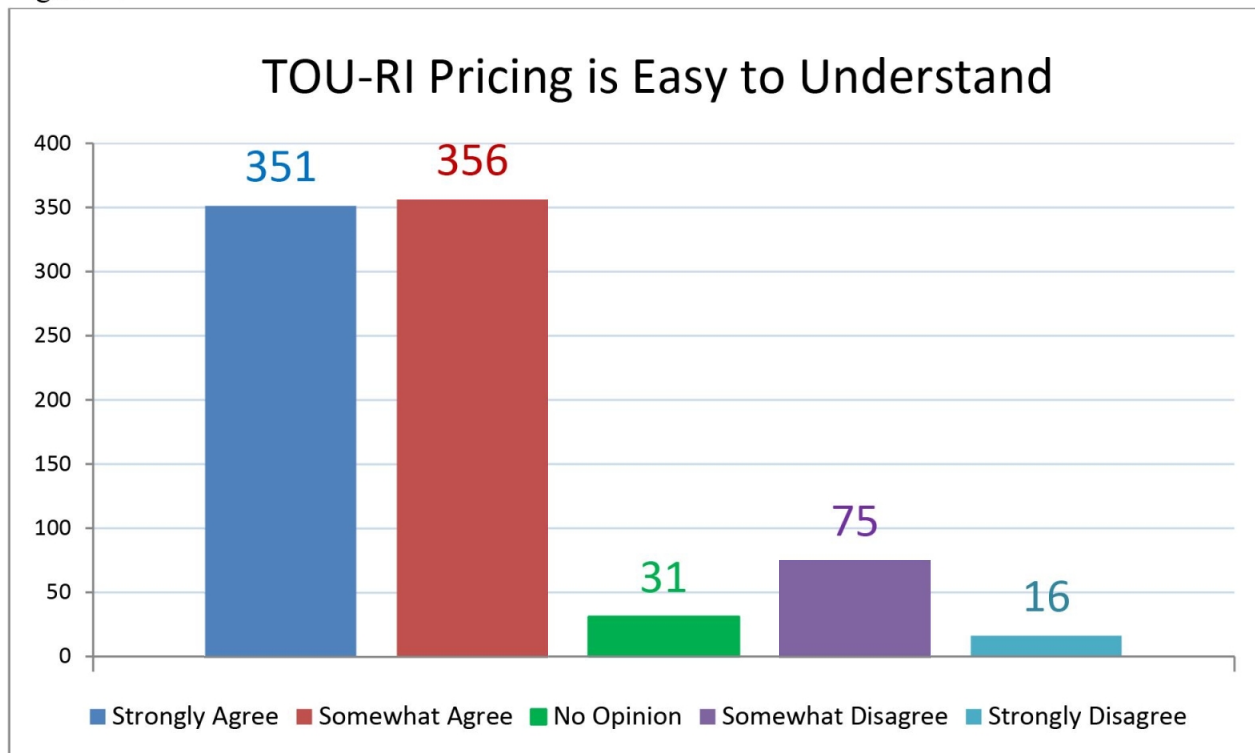


Figure 3.4

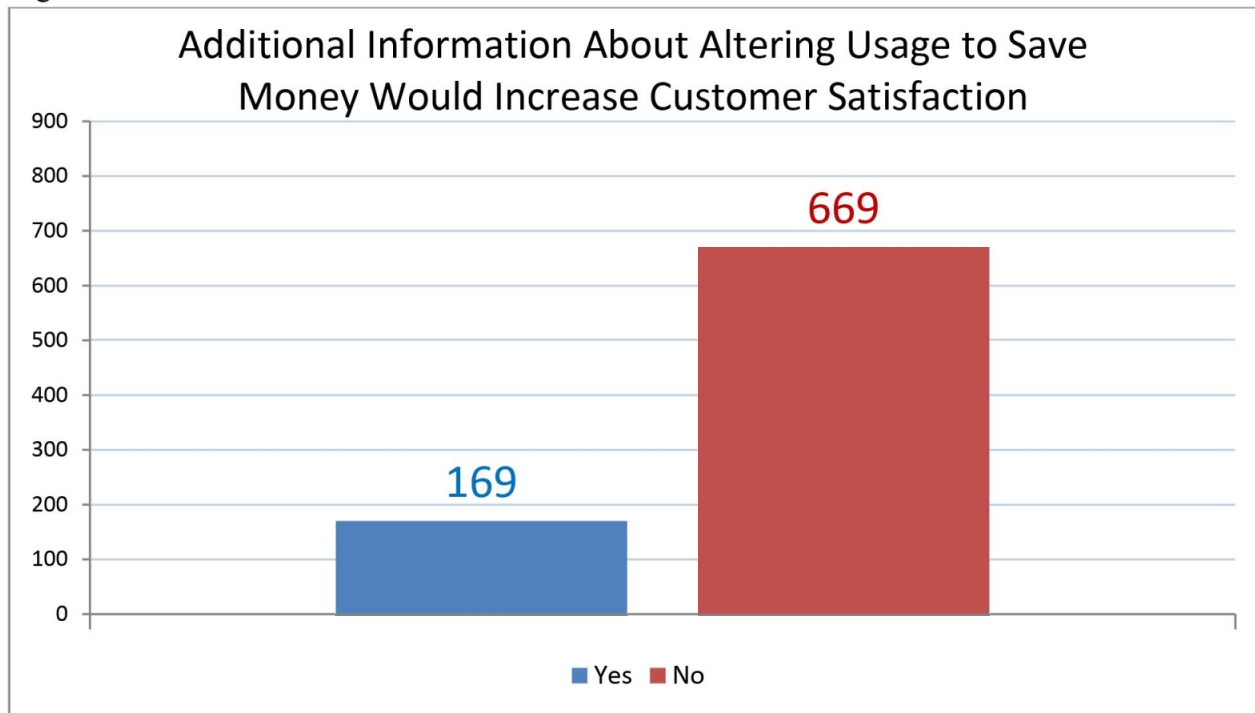
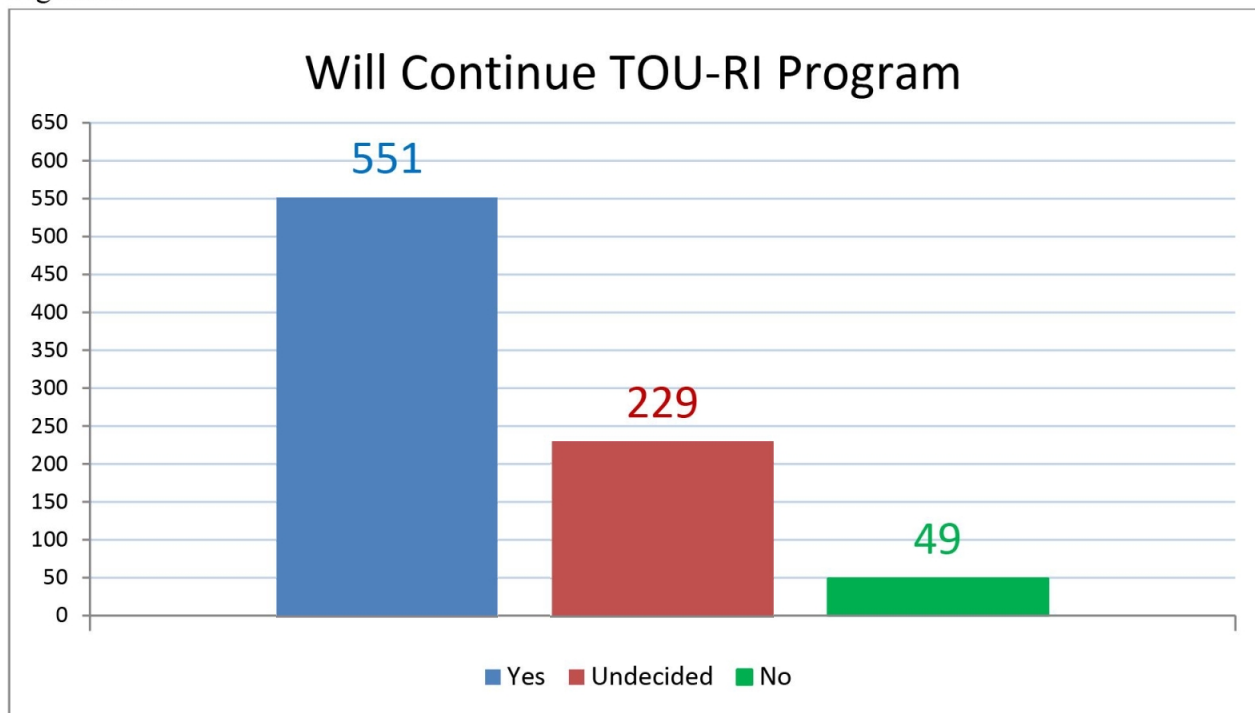


Figure 3.5



4. Usage or installation of any enabling technologies

Across the three annual surveys, participants also indicated the installation and/or use of enabling technologies, which are displayed in Table 4.1. It is worth noting that the 333 non-grid connected water heaters (gas, solar and direct PV) indicates that these customers have already made efforts to reduce their electric consumption. It also highlights that there may be limited potential amongst variable rate opt-in customers to shift electric load in a widely deployed program if one of the key drivers of residential electric load is not available to shift.

Table 4.1

Enabling Technology	Count
PV System	46
Gas Water Heater	74
Air Conditioning (AC) System	365
Solar Water Heater	246
Pool	98
Direct PV-Connected Water Heater	13
Energy Storage Device	10
Medical Devices	30

The Company further inquired about enabling technology and equipment that participants purchased for the sole purpose of enabling participation and/or saving money in the TOU-RI Program as displayed in Table 4.2. Several participants indicated that they purchased enabling equipment during or up to 24 months prior to program participation. Of particular interest are the number of participants indicating the purchase of smart appliances as well as electric water heater timers, which again indicates that this population of survey respondents is energy-savvy and looking for means to reduce their energy use.

Table 4.2

Enabling Technology & Equipment	Count
Smart thermostat	16
Smart power strip	76
Battery energy storage system	10
Home Control Equipment	13
EV	36
Electric water heater timer	146
LED or Compact Fluorescent Lighting	333
Smart appliances	115

5. Usage Patterns

Data in this chapter include monthly billing data collected during the baseline⁴ month for each TOU-RI participant and their monthly billing data one year later, through September 30, 2019. For example, if a customer enrolled in the TOU-RI Program and their baseline period occurred in January 2018, their one month of TOU-RI billing data will reflect usage during their January 2019 billing period. This approach provides a comparison that captures behavior changes observed during customers' participation in the TOU-RI Program. Other factors, such as seasonal effects, will have a smaller impact on observed differences in usage across the two months.

Customers have enrolled in the TOU-RI Program in different months throughout the year. However, this analysis focuses on the differences (kWh) between their baseline month and their TOU-RI month, one year later.

Baseline month TOU-RI data (e.g. consumption during on peak, midday and off peak hours) were extracted from the Company's database. Consumption reads from this data set were then compared and validated against the Company's customer billing system. TOU-RI data reads that did not match customer billing data were excluded from the analysis.

Customers who opted out of the TOU-RI Program within the first year of their participation were excluded from this analysis, as they would not have a TOU-RI month to compare to their baseline. Customers who enrolled in the program after September 2018 are also excluded, as data collection ran through September 30, 2019. These customers will also not have a TOU-RI month to compare to their baseline. Customers with zero billed kWh in either the baseline TOU month one year later were also excluded from this analysis. One outlier on Hawai'i Island was also excluded from the analysis⁵. A total of 1,893 customers were included in this analysis, which includes the 1,613 customers included in the previous analysis. All monthly kWh calculations are normalized⁶.

Table 5.1 – Customer counts by island.

Island	Average kWh Baseline	Average kWh TOU Month	Number of Customers
O'ahu	557	542	1,306
Hawai'i	546	564	403
Maui	550	588	170
Lana'i	499	768	7
Moloka'i	543	585	7

⁴ The baseline period is defined as the billing period just prior to the first month the customer is billed under the TOU-RI rate.

⁵ This customer's monthly billed kWh was consistently over 10,000 kWh/mo.

⁶ All bills were normalized to 30.4 days per month.

Overall, customers usage during their baseline month compared to one year later remained relatively the same on the three major islands of O‘ahu, Maui and Hawai‘i island. Lana‘i and Moloka‘i each had seven TOU-RI customers with a baseline and TOU-RI month and are therefore not included in island summary (Figure 5.1) below. There were some differences by island, with O‘ahu customers, on average, using 3% less, one year after their baseline month, Hawai‘i island customers using, on average, 3% more one year later and Maui customers, on average, using 7% more one year later. Much of the increase for Hawai‘i island and Maui customers occurred during the midday period. If customers shifted load from the on peak or off peak hours to the midday period, when the rates are lower, we would see differences below zero in the on peak and off peak period, with any positive differences in the midday period. We see this behavior exhibited to some extent on Hawai‘i island.

Figure 5.1

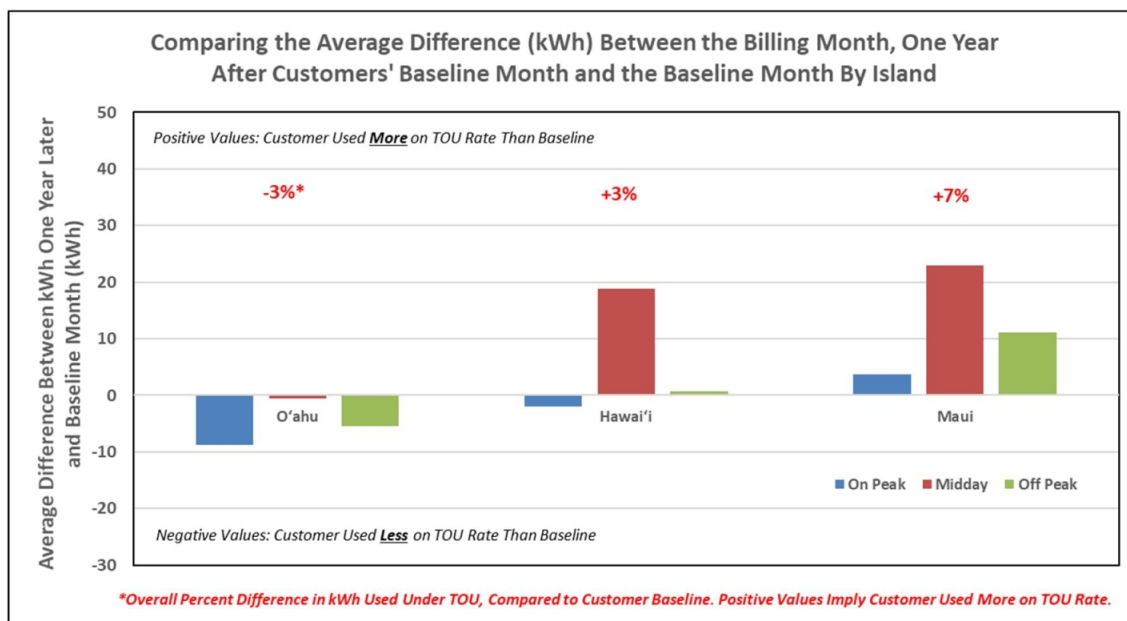


Table 5.2 – A comparison of monthly kWh by enrollment (baseline) month and one year later.

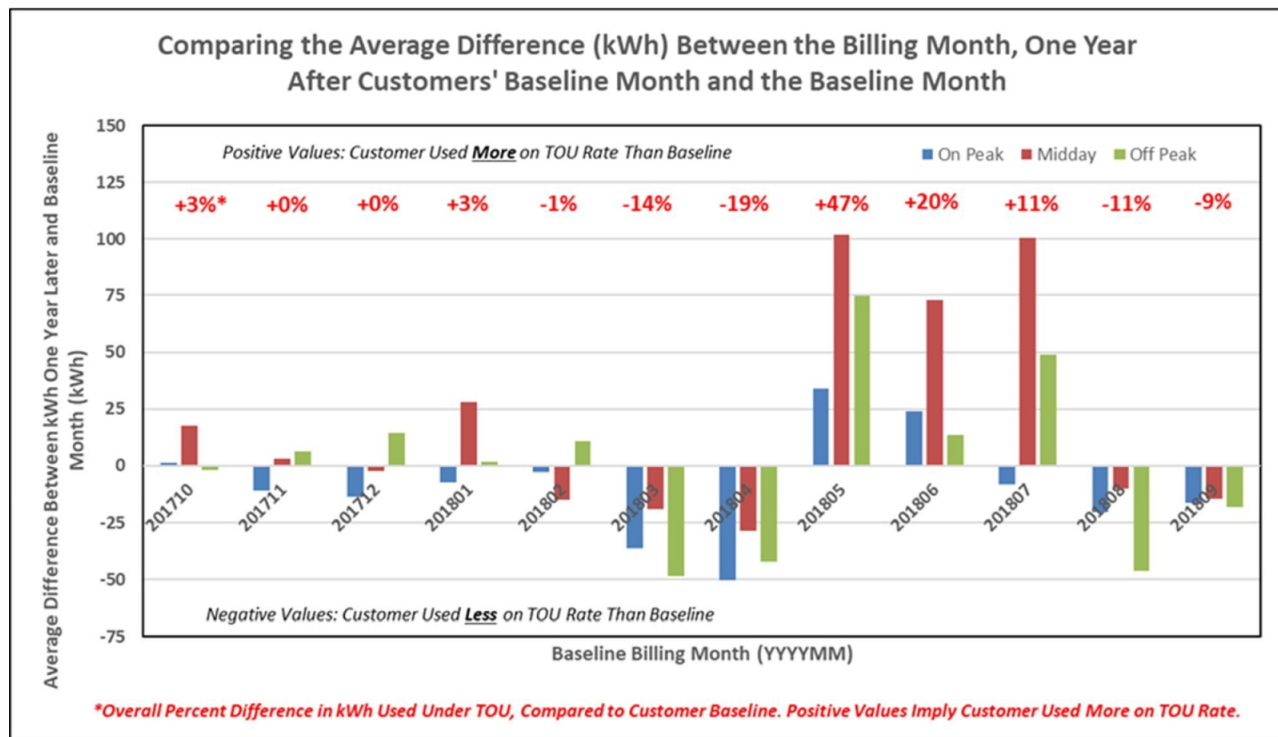
Baseline Month	Average kWh Baseline	Average kWh TOU Month	Number of Customers
201611	418	474	5
201612	560	554	92
201701	599	615	112
201702	493	498	203
201703	509	512	344
201704	598	586	138
201705	502	476	44
201706	560	554	437
201707	529	516	133
201708	644	617	84
201709	606	559	21
201710	519	536	94
201711	560	558	56
201712	760	758	13
201801	638	660	25
201802	578	572	15
201803	764	660	20
201804	642	521	11
201805	443	653	16
201806	554	665	11
201807	1,226	1,367	6
201808	712	635	9
201809	533	484	4

Red indicates a small number of customers included in baseline month.

Looking at usage by baseline month, compared to one year later, the average customer in any baseline month, with exception to those enrolling in September 2017, fell within +/-5% of their baseline consumption. Larger percentage differences are also observed beginning with the baseline month of March 2018. These larger differences may be due, in part, to the smaller number of customers enrolled in the baseline month. Changes within any time period (i.e. on peak, off peak, or midday) were within +/- 25 kWh per month, in baseline months through February 2018. That is, while the average customer's total kWh consumption remained relatively the same in their baseline month, compared to their bill one year later, there were some differences between the TOU-RI time periods.

Figure 5.2 summarizes the changes by time period for the last 12-months. Earlier baseline months (prior to October 2017) can be found in the previous report.

Figure 5.2



6. Bill impacts

The following tables compare aggregate bills of customers enrolled on the TOU-RI program with customers on Schedule R. There were several rate changes during the 2018 to 2019 period⁷, which required prorated calculations. Table 6.1 illustrates the aggregate TOU-RI bill for O‘ahu, Hawai‘i Island, and Maui versus the aggregate Schedule R bill for Non-PV accounts. Total savings when comparing the TOU-RI bill and the Schedule R bill for O‘ahu, Hawai‘i Island and Maui are \$171,358, \$103,597 and \$26,528, respectively. The estimated total savings is \$301,483.

⁷ HECO: Schedule R base rate changes effective September 1, 2018 and January 1, 2019. TOU-RI changes in September 1, 2018 and January 1, 2019.

HELCO: Schedule R base rate changes effective October 1, 2018 and February 1, 2019. TOU-RI changes in October 1, 2018, January 1, 2019, and February 1, 2019.

Maui: Schedule R base rate changes effective June 1, 2019. TOU-RI changes in January 1, 2019 and June 1, 2019.

Table 6.1 : Non-PV accounts without applying minimum charge

Island	Aggregate TOU-RI Bill	Aggregate Schedule R Bill	Total Savings (Bill Decrease)	Average Saved per Bill
O'ahu	\$3,010,268	\$3,181,626	\$171,358	\$9.97
Hawai'i Island	\$1,052,306	\$1,155,902	\$103,597	\$19.12
Maui Island	\$453,982	\$480,510	\$26,528	\$11.25
Total	\$4,516,556	\$4,818,038	\$301,483	\$12.07

Table 6.1 is for non-PV accounts and excludes NEM accounts. Consistent with last year's report, bill calculations are without applying the minimum charge. The analysis is based on data from September 2018 through August 2019. All TOU-RI accounts that had at least 3 months on TOU-RI as of September 2018 are included in this table. Only full months of billing data are included since partial months do not illustrate the full impact of a TOU-RI bill. The schedule R bill calculation is what would have been the equivalent Schedule R bill for the same bill periods without TOU-RI. Lāna'i and Moloka'i accounts are excluded from this report due to the low number of participants on those islands. The average savings per bill for non-PV customers without applying the minimum charge is \$9.97 for Oahu, \$19.12 for Hawai'i Island, and \$11.25 for Maui. The estimated total average savings per bill is \$12.07.

Table 6.2: PV accounts without applying minimum charge

Island	Aggregate TOU-RI Bill	Aggregate Schedule R Bill	Total Charges (Bill Increase)	Average Charged per Bill
O'ahu	\$128,464	\$103,141	\$25,323	\$43.14
Hawai'i Island	76,106	\$74,060	\$2,045	\$12.86
Maui Island	\$7,889	\$6,795	\$1,094	\$72.90
Total	\$212,459	\$183,997	\$28,462	\$37.40

Table 6.2 is for PV accounts and includes NEM accounts. Like last year's report, bill calculations are without applying the minimum charge. The analysis is based on data from September 2018 through August 2019. Estimated additional charges under TOU-RI for O'ahu, Hawai'i Island and Maui are \$25,323, \$2,045 and \$1,094 respectively. The total estimated additional charges is \$28,462. All TOU-RI accounts that had at least 3 months on TOU-RI as of September 2018 are included in this table. Only full months of billing data are included since partial months do not illustrate the full impact of a TOU-RI bill. The schedule R bill calculation is what would have been the equivalent Schedule R bill for the same bill periods without TOU-RI. Lāna'i and Moloka'i accounts are excluded from this report due to the low number of participants on those islands. The average increase per bill for PV customers is \$43.14 for Oahu,

\$12.86 for Hawai'i Island, and \$72.90 for Maui. The estimated total average increase per bill for Oahu, Hawai'i Island, and Maui is \$37.40. This shows that customers with PV are experiencing higher bills when enrolled in TOU-RI.

Table 6.3: Non-PV accounts- with applying the minimum charge (new method)

Island	Aggregate TOU-RI Bill	Aggregate Schedule R Bill	Total Savings	Average Saved per Bill
O'ahu	\$3,010,268	\$3,174,326	\$164,058	\$9.54
Hawai'i Island	1,052,306	\$1,154,996	\$102,691	\$18.95
Maui Island	\$453,982	\$480,482	\$26,499	\$11.24
Total	\$4,516,556	\$4,809,804	\$293,248	\$11.74

Table 6.3 shows bill calculations that includes application of the minimum charge for non-PV accounts and excludes NEM accounts. Total savings when comparing the TOU-RI bill and the Schedule R bill for O'ahu, Hawai'i Island and Maui are \$164,058, \$102,691, and \$26,499, respectively. The estimated total savings is \$293,248. The analysis is based on data from September 2018 through August 2019. All TOU-RI accounts that had at least 3 months on TOU-RI as of September 2018 are included in this table. Only full months of billing data are included since partial months do not illustrate the full impact of a TOU-RI bill. The schedule R bill calculation is what would have been the equivalent Schedule R bill for the same bill periods without TOU-RI. Lāna'i and Moloka'i accounts are excluded from this report due to the low number of participants on those islands. The average savings per bill for non-PV customers is \$9.54 for Oahu, \$18.95 for Hawai'i Island, and \$11.24 for Maui. The estimated total average savings per bill is \$11.74.

Table 6.4: PV accounts with applying minimum charge (new method)

Island	Aggregate TOU-RI Bill	Aggregate Schedule R Bill	Total Charges (Bill Increase)	Average Charged per Bill
O'ahu	\$128,464	\$110,024	\$18,440	\$31.41
Hawai'i Island	76,106	\$74,721	\$1,385	\$8.71
Maui Island	\$7,889	\$6,795	\$1,094	\$72.90
Total	\$212,459	\$191,540	\$20,919	\$27.49

Table 6.4 shows bill calculations that includes application of the minimum charge for PV accounts and includes NEM accounts. Like the table 6.3 write-up above, there were several rate changes during the 2018 to 2019 period, which required prorated calculations. The analysis is based on data from September 2018 through August 2019. Estimated additional charges under TOU-RI for O'ahu, Hawai'i Island and Maui are \$18,440, \$1,385 and \$1,094, respectively. All

TOU-RI accounts that had at least 3 months on TOU-RI as of September 2018 are included in this table. Only full months of billing data are included since partial months do not illustrate the full impact of a TOU-RI bill. The schedule R bill calculation is what would have been the equivalent Schedule R bill for the same bill periods without TOU-RI. Lānaʻi and Molokaʻi accounts are excluded from this report due to the low number of participants on those islands. The average increase per bill for PV customers is \$31.41 for Oahu, \$8.71 for Hawaiʻi Island, and \$72.90 for Maui. The estimated total average increase per bill for TOU-RI customers with PV when the minimum charge is applied is \$27.49. This is approximately \$10 when compared to the increase of \$37.40 for PV customers when the minimum charge is not applied.

7. Cost Benefit

The direct benefit to participants enrolled in the TOU-RI rate is relatively easy to evaluate: bill savings. Based on the bill impact numbers presented above, on average, there was a benefit of \$11.74 per month in bill savings to TOU-RI participants without PV relative to enrollment on the standard residential rate.

However, it is more difficult to evaluate the benefits of the TOU-RI rate to the Company and its non-participating customers as well as indirect benefits to the participating customers. A variable rate is intended to provide peak load reduction and a shift of that load to off-peak hours. This materializes in (1) a capacity benefit, that is, a sustained reduction of energy use that leads to less system capacity required to meet load; and (2) an energy benefit of reducing the use of more expensive generation resources at peak and potentially reducing overall energy demand because the same load that exists at peak may not need to be met during off-peak hours.⁸ This, in theory, would reduce the overall costs of generation for the Company and its customers, and bring down utility rates.

Other benefits that may materialize from a variable rate may include an increase in renewable generation penetration and price signals that create a demand for the integration of additional renewables, energy storage systems, and smart grid technologies, such as home automation.

Unfortunately, the Company is not sufficiently able to evaluate these benefits, as using a one-month baseline combined with seasonal variations is not an ideal method for calculating customer load shift. As stated within section 5, load shift measurements use one calendar month as the baseline for all subsequent months on the program. As an example, a baseline established in July is not a good comparison for a January bill. In addition, participating customers, although not advised to change load behaviors for the first month, may do so anyway, which convolutes the analysis.

Ideally, in a designed experiment, there would be a randomized control group in addition to the group on the TOU-RI rate. With this design it would be possible to evaluate the relative impacts between the groups and ascertain a benefit to the system as well as to customers. If this information was available, benefits could be estimated through a Total Resource Cost Test as well as other utility cost tests. The costs associated with TOU-RI include meter procurement and installation, meter reading, and program administration.

⁸ Since participating customers, for the most part, do not have energy storage resources, any reduction in peak use is unlikely to be entirely shifted to off-peak hours.

8. Conclusion

Although the interim TOU-RI Program has a number of positive indicators and is generally well-liked by those who have maintained their enrollment in the Program (e.g. relatively high customer satisfaction as demonstrated through survey results displayed in Section 3), there is a lack of reliable data available at this point to conclusively determine Program results.

From the data that is available, we can see that the TOU-RI rate works best for those who have the flexibility to shift their load into the daytime period, as indicated by the high amount of (self-reported) retirees on the rate. On average, customers (excluding customers with PV systems) were able to achieve a lower bill. These findings were consistent with the prior annual report covering the period October 1, 2017 to September 30, 2018.

The TOU-RI program has provided valuable insight for the Company in understanding a relatively large variable rate program. This includes a better understanding of the need for baseline data, the importance of clearly communicating the process and benefits of the TOU-RI Program to customers, and the lessons learned associated with meter roll out and data collection. It has also provided interested and participating customers the opportunity to benefit from responding appropriately to the additional price signals provided in the TOU-RI rates.

Marketing for the TOU-RI program during the time-period between October 1, 2018 to September 30, 2019 was limited to bill inserts distributed in February 2019, as illustrated in Figure 2.2. Similar to the February 2019 bill insert, the Company plans to include an article on TOU-RI in the Company's Ho'oku'i newsletter for customers in the first quarter of 2020. The Company will look to analyze customer load data and consider marketing the TOU-RI program in the future to such customers who may possibly benefit.

As described in the Advanced Rate Design Strategy⁹ (ARDS), the Company plans to propose changes to residential TOU rates in 2020. The anticipated TOU rates may have greater temporal granularity to provide better price signals to customers and similarly offer more granular ways for customers to control their bills.

The Company is also developing improved customer portals to allow customers access to information regarding usage and profiles to make more informed decisions on program offerings to suit their needs. The Grid Modernization program will provide customers with advanced meters access to a Customer Energy Portal which allows customers to view their usage the following day. Giving customers such data will allow more visibility into their energy usage and determining if they may benefit from the various programs available.

⁹ Docket No. 2019-0323, *Advanced Rate Design Strategy*, filed on September 25, 2019.